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| 09/612,176      | 07/08/2000  | Thomas L. Ritzdorf   | 291958117US         | 7779             |

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EXAMINER

SMITH, ZANDRA V

|          |              |
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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2877

DATE MAILED: 06/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/612,176

Applicant(s)

RITZDORF ET AL.

Examiner

Zandra V. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7. 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7-9, 13-15, 17, 19 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by *Holzapfel et al.* (5,872,633).

As to **claims 1, 13, and 17**, Holzapfel discloses a system for detecting removal of thin film layers during planarization, comprising:

an in-line metrology unit (127) for measuring and generating a condition signal (col. 2, lines 62-65);

a control (326), connected to the metrology unit (col. 7, line 18);

a process unit (100, col. 5, line 6);

wherein the condition signal from the metrology unit to the control, influences the process (col. 7, lines 16-25, lines 50-62 and col. 8, lines 5-8).

As to **claim 7**, Holzapfel discloses everything claimed, as applied above, in addition a CMP processing tool is provided (100, col. 5, line 6).

As to **claims 8-9**, Holzapfel discloses everything claimed, as applied above, in addition measurement may be made before and after CMP (col. 11, lines 11-30).

As to **claim 14**, Holzapfel discloses everything claimed, as applied above, in addition 5 or more processing tools are provided and the parameters are modified according to measurement (col. 7, lines 17-62).

As to **claim 15**, Holzapfel discloses everything claimed, as applied above, in addition the workpiece is processed in one processing tool and then another (col. 7, lines 17-25).

As to **claim 19**, Holzapfel discloses everything claimed, as applied above, in addition a CMP unit is provided (col. 6, lines 6-15).

As to **claim 22**, Holzapfel discloses everything claimed, as applied above, in addition a CMP thickness is measured (col. 11, lines 1-30).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Holzapfel et al.* (5,872,633) in view of *Ushijima* (5,393,624).

As to **claim 2**, Holzapfel discloses everything claimed, as applied above, with the exception of a non-compliance unit, however to do so is well known as taught by Ushijima. Ushijima discloses a system for manufacturing a semi-conductor device that includes a non-compliance unit (col. 10, lines 34-56) and a transport signal-connected to a control, wherein a condition signal from a metrology unit causes the transport to transfer the workpiece to the non-

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compliance unit. It would have been obvious to one having ordinary skill in the art at the time of invention to include a non-compliance unit and its control to improve throughput.

Claims 3-6 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Holzapfel et al.* (5,872,633) in view of *Etherington* (6,231,743).

As to **claims 3 and 20-21**, Holzapfel discloses everything claimed, as applied above, with the exception a seed layer, enhancement unit, and transport, however to do so is well known as taught by Etherington. Etherington discloses a system for forming a semiconductor device that includes a seed layer, enhancement unit and transport (col. 5, lines 35-59 and col. 6, lines 1-3). It would have been obvious to one having ordinary skill in the art at the time of invention to include seed layer, enhancement unit, and transport to control the thickness of the seed layer, since the seed layer helps to reduce stress on the surface of the workpiece.

As to **claims 4 and 6**, Holzapfel and Etherington discloses everything claimed, as applied above, in addition Etherington provides an electroplating reactor with a plurality of anodes, a workpiece holder, and a cathode (col. 1, lines 19-30). It would have been obvious to one having ordinary skill in the art at the time of invention to include because electroplating has proven to be a cost effective and efficient method.

As to **claim 5**, Holzapfel and Etherington discloses everything claimed, as applied above, in addition, Etherington provides seed layer thickness measurement and control (col. 5, lines 35-420). It would have been obvious to one having ordinary skill in the art at the time of invention to provide seed layer thickness measurement and control to maintain the appropriate thickness of the seed layer to reduce stress on the workpiece.

Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Holzapfel et al.* (5,872,633) in view of *Mack* (5,363,171).

As to **claims 10 and 11**, Holzapfel discloses everything claimed, as applied above, with the exception a photoresist exposure tool and the first layer comprising a photoresist layer, the thickness of which is to be measured, however to do so is well known as taught by Mack. Mack discloses a photolithography exposure tool and in-situ photoresist measurement system that includes a photoresist exposure tool and a thickness measurement of the photoresist layer (col. 3, lines 49-55 and col. 5, lines 1-2). It would have been obvious to one having ordinary skill in the art at the time of invention to include photoresist exposure tool and a thickness measurement to control the thickness of the photoresist layer.

As to **claim 12**, Holzapfel and Mack discloses everything claimed, as applied above, in addition Mack discloses the need to measure critical dimensions of the pattern on the substrate (col. 4, lines 16-30). It would have been obvious to one having ordinary skill in the art at the time of invention to measure pattern dimensions to determine the exposure for substrate production.

Claims 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Holzapfel et al.* (5,872,633).

As to **claim 16**, Holzapfel discloses everything claimed, as applied above, with the exception of the claimed processing order, however since the workpiece may be processed in any order, it would have been obvious to one having ordinary skill in the art at the time of invention to process the wafer as claimed.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Holzapfel et al.* (5,872,633) in view of *Joyce et al.* (6,238,539).

As to **claim 18**, Holzapfel discloses everything claimed, as applied above, with the exception of an electrochemical disposition unit, however the inclusion of an electrochemical disposition unit is well known as taught by Joyce. Joyce discloses in-situ control in electroplating that includes an electrochemical disposition unit (col. 4, lines 48-52). It would have been obvious to one having ordinary skill in the art at the time of invention since electrochemical disposition is a cost effective way for forming films.

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 09/612898. Although the conflicting claims are not identical, they are not patentably distinct from each other because similar structure and methods are claimed. Specifically, a metrology unit, electrochemical processing, non-compliance unit, seed layer, seed layer enhancement, and thickness measurement.

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This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

*Uzoh et al. (6,168,693 B1)* discloses a system for controlling the uniformity of an electroplated workpiece.

*Kumar et al. (6,270,634 B1)* discloses a system for plasma etching at a high etch rate.

*Stevens et al. (6,331,490)* discloses a system for etching thin film layers of a workpiece.

### ***Fax/Telephone Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (703) 305-7776. The examiner can normally be reached on 7:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703)308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0530.



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Zandra Smith

Patent Examiner

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June 25, 2002